DISCUSSION OF THE AMENDMENT

Claims 7-13 and 16-27 are active in the present application. Claims 7 and 9 are amended to require that the starch is an oxidized starch and that the oxidized starch and the cellulose are chemically bonded to one another. Support for the amendment is found in the Examples of the specification. Applicants submit that amylopectin is readily recognized as an ingredient of starch and will therefore inherently be present in the composition of the present claims. Thus, this redundant limitation of the previously presented claims is now removed for clarity. Claims 7-20 and 22-27 are presently under active prosecution. Claim 21 is presently withdrawn from prosecution. Claims 1-6 and 14-15 are cancelled claims. Claims 21-27 are new claims support for the new claims is found in Example 1 of the original specification (see arguments herein).

No new matter is added.

REMARKS

The Office rejected Claim 7 as indefinite. Applicants submit that the amendment to Claim 7 obviates the rejection.

The Office objected to Claim 9 and stated that the word "bonded" should be changed to "bound". Applicants submit that the word "bonded" means that a chemical bond exists between the starch and the cellulose. This term correctly describes the binding between the starch and the cellulose and is therefore appropriate. The present amendment to the claims obviates the rejection.

Independent Claims 7 and 9 are amended to require that the oxidized starch and cellulose are chemically bonded to one another. Applicants submit that the examples of the original specification inherently describe the transesterification of oxidized starch and cellulose and the formation of chemical bonds between oxidized starch and cellulose. Therefore, the amendment to the claims is supported by the original specification.

Applicants draw the Office's attention to the Declaration under 37 C.F.R. 1.132 submitted herewith. The Declarant, Dr. Mirco Chiodero, declares that an esterification reaction will occur between oxidized starch and cellulose under the conditions described in Example 1 of the specification. Dr. Chiodero declares for example:

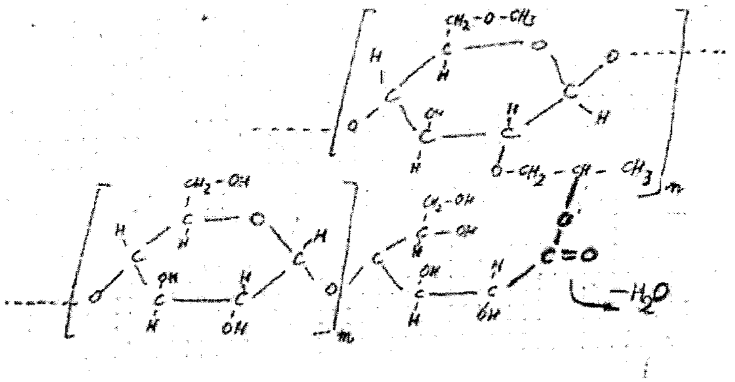
> It is my opinion that one of ordinary skill in the art would readily recognize that under the conditions of the Examples disclosed in the present specification that oxidized starch and cellulose would inherently form a chemical bond.

See paragraph 11 of Dr. Chidero's Declaration.

Dr. Chidero further declares that Example 1 of Xu, cited as prior art by the Office, describes the use of pre-gelatinized starch which is a starch product that does not have the carboxyl groups found on oxidized starch. Because the pre-gelatinized starch of Xu does not have carboxyl groups no esterification reaction occurs between the starch and the cellulose of Xu.

Dr. Chidero further declares:

> 12. For example, Example 1 described on pages 5-7 of the present application (U.S. 10/680,115) describes heating a mixture that includes oxidized starch and hydroxypropylmethyl cellulose (i.e., a cellulose). Oxidized starch has acidic carboxyl groups (i.e., groups of formula -COOH). Cellulose has hydroxyl groups (i.e., groups of formula –OH).
>
> 13. Under the conditions described in Example 1 of the present application (U.S. 10/680,115), i.e., heating a mixture of oxidized starch and hydroxylpropylmethyl cellulose to a temperature of 35°C, an esterification (condensation) reaction takes place (with consequent formation and loss of water) between the hydroxyl groups (–OH) of the cellulose and the carboxyl groups (–COOH) of the oxidized starch. The diagram showing how an oxidized starch and a cellulose are chemically bonded to one another by the transesterification reaction is described below, the formation and loss of water having been represented by the symbol "- H_2O".



> 14. The esterification reaction taking place between oxidized starch and cellulose (e.g., hydroxypropylmethyl cellulose) forms a strong chemical bond between the oxidized starch and the cellulose. Such a reaction is common knowledge in the field of the condensation of macromolecules.
>
> 15. An esterification reaction will inherently take place between the oxidized starch and the hydroxypropylmethyl cellulose under the conditions described in Example 1 of the present specification.

The original specification thus supports the present amendment to the claims for reasons that include the disclosure of an example in the original specification that inherently describes a composition that includes oxidized starch chemically bonded to a cellulose.

As applicants will demonstrate below, a composition that includes oxidized starch and cellulose chemically bonded to one another by transesterification is not described in the prior art relied on by the office.

Applicants thank the Office for withdrawing the rejections in view of Zecchino, Sharik and Tien. The Office is now of the opinion that the claimed subject matter is obvious in view of Xu (US 6,419,903) and/or Borek (US 2003/0096002).

Xu does not disclose or suggest a composition that includes an oxidized starch chemically bonded to a cellulose (see present Claims 7 and 9). At best, Xu discloses a homogeneous mixture of a cellulose and a pre-gelatinized starch (see column 4, lines 54-63 of Xu). The homogeneous mixture described in Example 1 of Xu is obtained by mixing a pre-gelatinized starch and a cellulose as a solution in deionized water. There is no indication that the aqueous mixture is treated in such a way to induce chemical bonding between the starch and the cellulose.

Likewise Borek discloses mixtures of materials that may include a starch and a cellulose. The mixtures Borek are made, for example, by mixing various ingredients and dissolving the ingredients in water. There is no disclosure or suggestion in Borek that the mixtures are treated in a manner that would result in a transesterification (condensation) reaction between the starch and the cellulose.

Applicants submit herewith chemical structures of hydroxypropylcellulose and starch for easy reference by the Office. The chemical structures were obtained from the website www.sigmaaldrich.com. Hydroxypropylcellulose contains hydroxyl (i.e., -OH) and ether groups (i.e., R-O-R). A structure of starch, also shows the presence hydroxyl and ether groups. As discussed above, an oxidized starch has carboxyl groups (i.e., groups of chemical formula –COOH). The ANNEX attached herewith shows the structures of hydroxypropylcellulose and oxidized starch prior to undergoing a transesterification reaction.

The structure of the chemically bonded mixture of the oxidized starch and cellulose of the present claims differs from the structures of the hydroxypropylcellulose and starch attached herewith because these structures are changed by a transesterification (condensation) reaction.

The Office stated in support of the rejection:

> The HPMC and starch will obviously be bound together due to the binding properties of the starch.

See page 3, lines 13-14 of the July 25, 2007 Office Action.

The Office provided no evidence supporting the assertion that mixing an oxidized starch with a cellulose will necessarily or spontaneously result in the formation of chemical bonds between the starch and the cellulose. Thus, the requirement of the present claims that the starch and the cellulose are chemically bonded (i.e., Claims 7 and 9) is not disclosed or suggested in the prior art relied on by the Office. The cited prior art merely discloses mixtures of cellulose and starch.

Applicants submit that it is readily recognized that physical bonding and chemical bonding are entirely different. As stated above for Xu, there is no disclosure or suggestion in any of the cited prior art that the prior art starch and cellulose will necessarily be chemically bonded together when they are mixed. Applicants request withdrawal of the rejection.

With respect to the obviousness-type double patenting rejections, Applicants reserve the right to file a Terminal Disclaimer to obviate the rejection after the Office has identified allowable subject matter.

As stated above in detail, Applicants submit that a composition containing a mixture of an oxidized starch and a cellulose chemically bonded to one another is not disclosed in the prior art of record. The claimed invention is therefore patentable over the cited prior art. Applicants request withdraw of the rejections and the allowance of all now-pending claims.

Respectfully submitted,

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